Review

MEDICINE PALLIATIVE CARE

DOI: 10.47582/jompac.1541149

J Med Palliat Care. 2024;5(6):327-333

The impact of non-pharmacological interventions on quality of life in dementia: a review of evidence and outcomes

Ömer Özişli, Enes Kara

Department of Medical Services and Techniques, Vocational School of Health Services, Sakarya University, Sakarya, Turkiye

Cite this article as: Özişli Ö, Kara E. The impact of non-pharmacological interventions on quality of life in dementia: a review of evidence and outcomes. *J Med Palliat Care*. 2024;5(6):327-333.

Received: 30.09.2024 • **Accepted**: 06.11.2024 • **Published**: 23.12.2024

ABSTRACT

Dementia is a neurodegenerative disease that causes a progressive decline in cognitive function in older people, seriously affecting their quality of life. Different types of dementia, such as Alzheimer's disease, vascular dementia and dementia with Lewy bodies, cause a significant decline in patients' daily living skills, social interactions and general health status. In this context, the impact of dementia on individuals' quality of life has been extensively studied. Non-pharmacological interventions have an important place in the management of dementia. Approaches such as physical activity, cognitive exercises, social interaction, healthy diet and music therapy support patients' cognitive functions and offer potential benefits in improving quality of life. Research indicates that these interventions not only delay the cognitive decline associated with dementia but also reduce psychological symptoms like depression and anxiety, thereby enhancing emotional well-being. In particular, given the progressive nature of dementia, it is emphasised that the implementation of such interventions plays an important role in mitigating the negative effects of the disease. Evidence from recent studies underscores that the integration of these approaches into dementia care improves daily functioning and lessens caregiver burden, emphasizing the need for a comprehensive care model. Furthermore, given the economic and societal impact of dementia, it is essential to develop strategies to improve patients' quality of life. Studies show that holistic and sustainable interventions are needed to mitigate the far-reaching effects of dementia on individuals and society.

Keywords: Dementia, quality of life, neurodegenerative diseases, cognitive impairment, social interaction

DEMENTIA

Dementia is recognised as one of the most serious health problems of our time. The number of people with dementia is increasing rapidly worldwide and, according to data from 2019, approximately 50 million people will be affected by this disease.[1] This number is predicted to reach 152 million by 2050, demonstrating that dementia is a serious public health problem at both individual and societal levels. Dementia leads to a progressive deterioration in a person's cognitive functions, reducing their ability to function independently in activities of daily living and, over time, leading to their total loss.[2]

Dementia is a condition that profoundly affects the quality of life of both the person with dementia and their carers. Particularly as the disease progresses, the physical, emotional and mental strain on carers increases as the person's level of dependency increases.[3] Carers of people with dementia are mostly family members or close friends, and this situation defines them as 'informal carers'. Informal carers usually take on this responsibility without professional support, which increases their risk of experiencing stress and burnout.[4]

Given the high burden of dementia on individuals and society, the development of effective intervention strategies has become a necessity. Non-pharmacological interventions play an important role in the management of this disease. These interventions have been developed to alleviate psychological symptoms such as depression and anxiety, improve quality of life and reduce the burden on carers.[5] However, there is insufficient consensus in the literature as to which intervention is more effective. In this context, systematic reviews and meta-analyses that evaluate the effectiveness of different interventions for people with dementia and their carers help to identify the most effective strategies by looking at the available information from a broader perspective.

Trials comparing the effectiveness of non-pharmacological interventions developed to alleviate the effects of dementia provide important information for health professionals and policy makers with regard to people with dementia and their carers. These interventions attempt to alleviate the cognitive and physical difficulties experienced by people with dementia and the psychological and physical distress experienced by their carers. Various non-pharmacological approaches are being evaluated to improve the quality of life of people with dementia and to reduce the burden of care on carers. These approaches will be used to minimise the impact of dementia on individuals and society.

QUALITY OF LIFE

The World Health Organisation has defined health as 'a state of complete physical, mental and social well-being and not

Corresponding Author: Ömer Özişli, omerozisli@sakarya.edu.tr

This work is licensed under a Creative Commons Attribution 4.0 International License.

merely the absence of disease'. According to this definition of health, it is not enough to have no health problems to be a healthy individual. This person is also expected to have a state of complete well-being. Complete well-being cannot be achieved for most people. Therefore, most people in society cannot be described as healthy and only a few people can be described as healthy.[6] The World Health Organisation defines quality of life as 'how individuals view their goals, expectations, standard of living, values, culture and belief structures in the society in which they live as a whole'.[7] The concept of quality of life was first defined by Thorndike (1939). According to this definition, quality of life is 'the reaction of the social environment in which the individual lives and is the result of a good quality perception of the individual'. Andrew and Withey defined quality of life as 'the intersection of individual satisfaction and social relationships'.[8]

Quality of life is a universal goal. This can be explained by Maslow's (1970) theory of the hierarchy of needs. There are five titles in the hierarchy of needs:

✓ Physical needs (food, water, shelter...)

✓Safety needs (security, health, protection...)

✓Social needs (belonging to a group...)

✓ Respect needs (social status, recognition...)

✓Self-actualisation (enrichment of individual life, achievement of goals...)

Maslow's hierarchy of needs shows that the satisfaction of the most basic human needs is important in terms of both quality and quantity. Quality of life is related to the way in which one becomes aware and reaches the level of excellence throughout life.[9]

Quality of life is shaped by an individual's ability to have a job he or she wants, to develop hobbies related to his or her field of interest, to be accepted in a social environment, and to achieve individual satisfaction. An individual's quality of life is also shaped by his or her outlook on life. The perception of quality of life can vary from person to person. Quality of life reflects the individual's sphere of life. An individual who is satisfied in one area of life may not be able to achieve quality of life in another area of life. In the perception of quality of life, one person may keep his perception of quality of life high by enjoying his job, while for another person the positive perception of quality of life is the relationship with his relatives. People's quality of life can also vary for different reasons. For example, the development of situations such as interest in the opposite sex and falling in love, sudden illness, mistreatment at work or in the family can rapidly change an individual's well-being and quality of life.[10]

There are two types of quality of life indicators. There are objective indicators and subjective indicators. Objective indicators of quality of life include the basic needs of individuals in society. These physical needs are the same for all people. These indicators, also known as objective indicators, include the physical and mental health of the individual, the material lifestyle, the quality of the living environment, the level of nutrition, and job opportunities. Indicators of physical well-being are those that are more visible to the public. In this sense, they are indicators that can be measured and observed by individuals.[11] Objective indicators of quality of life include characteristics such as gender, age, marital status, level of education, income, health, social support, housing characteristics and leisure activities.[12]

Subjective measures of quality of life include individuals' satisfaction or dissatisfaction with life. The subjective indicator also includes an individual's dissatisfaction with the situation in which they find themselves.[13] Subjective quality of life indicators reflect the psychological well-being of individuals. Emotional well-being and issues related to its effects are the subject of these phenomena.[14]

Quality of life has a dynamic structure. It also shows variability. In this sense, quality of life is not the value and measurement of something that has happened and is fixed for the individual. It is a situation that is perceived and experienced according to changing experiences and conditions.

Quality of Life in Old Age

Ageing is a normal process. It involves anatomical, physiological, social and mental changes in older people. In the current century, rapid changes and transformations are taking place in the fields of health and technology. As a result, the decline in the birth rate, the importance of public health services, the awareness of nutritional habits, the early diagnosis of many diseases and the rapid steps taken to treat them have also increased the life expectancy predicted from birth. The World Health Organisation has defined old age as a decline in the individual's ability to adapt to his or her environment. According to the World Health Organisation, the world's population is ageing and it is predicted that the elderly population will reach 2.1 billion by 2050.[15] In parallel with the increase in the world's elderly population, the elderly population in Turkey is also increasing. Ageing is one of the most important issues of the last century.[16]

Biological, physiological, psychological and social changes associated with ageing also differentiate the life processes of older people.[17] Quality of life in old age varies according to different parameters. Marital status, sociality, economic status, age, satisfaction with life with family members, cognitive status and isolation influence these changes. These issues that develop in old age should be taken into account when interpreting quality of life. These considerations are important for protecting the health of older people and for understanding the factors that influence their quality of life and happiness. It is well known that quality of life and well-being in old age are more important than length of life. While the main goal for health problems in young people is treatment, the main goal for the older population is to maintain quality of life.[18]

Biological, psychological, physical and social changes that occur at all stages of development are considered to be regression in old age.[19] With advancing age, older people become less active and adopt a more sedentary lifestyle. Chronic diseases also increase with age. As the incidence of disease increases, older people become more fragile. In this case, older people need more help from others in their daily lives, and their quality of life is negatively affected. In order

to reduce the effects of this negative picture, it is necessary to support active living opportunities for older people, together with exercise as far as possible.[20] This support should be provided through a holistic approach and will have even more significant results in maintaining the quality of life of older people.[21]

Although older people often do not want to, they find it difficult to carry out active life activities as a result of the limitation of their life activities in the process and the limitation itself. As a result of these difficulties, they may be excluded from most areas such as education, the economy, health and politics. As a result of this exclusion, older people may also leave their place of residence and become even more isolated in their new place of residence. The absence of neighbours and friends whom they trusted in their previous environment increases the severity of this feeling of loneliness. Lonely older people feel more excluded than other older people. The more crowded the environment of older people, the less they feel excluded.[22]

The occurrence of chronic diseases in old age is a common situation. In this context, knowing which diseases they suffer from most and managing the process in a healthy way gives good results. Human life expectancy varies according to the wear and tear on the life reserves of individuals, especially the elderly. Although attempts are made to treat most of the chronic diseases of the elderly, the main aim is to control the life functions of the elderly through treatment and to take steps to maintain their quality of life. For example, when treating anaemia in an elderly person with anaemia, the aim is also to maintain the elderly person's condition by reducing the severity of the disease. The aim is to prevent the rapid development of diseases by starting drug treatment early in order to create a healthy life for the elderly, to minimise loss of movement and balance, and to ensure early diagnosis of predictable and unpredictable diseases. As a result of early intervention, diseases can be suppressed and the quality of life of the elderly can be improved. Today, quality services for the elderly will contribute to successful ageing and facilitate the most appropriate approach to the elderly. In order to protect the health of the elderly, it should not be forgotten that respecting and developing the rights of the elderly in the modern sense is the premise of quality of life in geriatrics.[23]

Dementia and Quality of Life

Dementia is a syndrome that is often difficult to reverse due to neuronal degeneration. The main symptoms are cognitive impairment and behavioural restriction. These symptoms are one of the targets of interventions to improve patients' quality of life. Poor depressive and behavioural states negatively affect the quality of life of people with dementia in various activities. The quality of life of people with dementia who engage in various social activities and occupations is better than that of those who do not engage in these activities. The quality of life of people with dementia who have a hobby is also higher. People with dementia who spend most of their time sleeping and doing passive activities during the day have a fairly low quality of life. The quality of life of people with dementia improves when the families or care centres caring for people with dementia show interest in the patient with different activities.[24]

People who assess the quality of life of people with dementia act within the framework of the information provided by the patient's relatives. As carers' responses, such as attention deficit, memory status, judgement style and way of responding to questions, are predominant in measuring the quality of life of people with dementia, methodological assessments may sometimes differ. In a holistic view of dementia, it is important to consider the patient's general well-being, social status, mobility and, most importantly, basic human needs.[25] When assessing this issue, it is very valuable for the patient to assess the quality of life of the person with dementia and to take action to improve it.

The type of communication used to contribute to the quality of life of the person with dementia is also important. In the conclusions of the study of communication in people with dementia, conducted by Ruth Tappen and colleagues at Florida Atlantic University, it was stated that such patients should not be asked open-ended questions and that answers should be in the form of yes and no. Communication with people with dementia should focus on a single topic, and emotions should not be discussed. The following points should be observed when communicating with people with dementia:[26]

- Treat the person with dementia as an adult

- Assume that the patient understands you

- Observing and following emotions that cannot be expressed verbally

- Allowing the person with dementia time to respond

- Trying to recognise the patient without forgetting that the person with dementia is an individual

- Changing the communication strategy according to the specific situation of the person with dementia.

In dementia, techniques such as simplifying communication (related to daily life), facilitating (feelings and thoughts), understanding style (maintaining conversation and dialogue), supportive (supporting the patient's personality) according to the purpose of the patient's care are effective on the patient's quality of life.

Dementia has early, intermediate and advanced stages. In the early stage, the person begins to forget names. Newly learned information is quickly forgotten. There is difficulty finding things and a need to keep a list. In the early stage, there is a deterioration in near memory. During normal work, they have difficulty with complex calculations. In the middle stages, distant memory deteriorates. Patients may get lost in unfamiliar places. They also have difficulty speaking with disorientation and difficulty using and finding words. At this stage, patients' quality of life deteriorates considerably. In the final stage of the disease, the patient is unable to recognise even family members. They have no sense of time or space. They can confuse the rooms even in the house they live in. They get lost in places they used to know. In this case, the patient becomes agitated, shows repetitive behaviour and is now completely dependent.[27]

Some of the things that family members and patients can do to improve the quality of life of people with dementia are:[28]

- Physical activity: Encouraging physical activity in people with dementia has been shown to positively impact overall health by promoting physical and mental well-being. Regular exercise, such as walking or light stretching, can slow the rapid progression of dementia by enhancing blood flow to the brain and supporting cardiovascular health. Studies suggest that even short daily walks help improve mood and cognitive performance in individuals with dementia.[50,51]

- Mental exercise: Engaging dementia patients in mental exercises, such as solving puzzles, playing memory card games, or using word association activities, has been found to strengthen neural connections and promote cognitive flexibility. Regular mental exercises help delay cognitive decline by stimulating memory and problem-solving skills. Research highlights the benefits of structured cognitive activities in sustaining attention and slowing memory loss in dementia patients.[52,53]

- Social interaction: Social interaction plays a critical role in supporting the emotional well-being of individuals with dementia. Positive engagement with family members, friends, or group activities can reduce feelings of isolation and foster a sense of belonging. Studies show that social interaction lowers levels of depression and anxiety in dementia patients, which in turn enhances their overall quality of life.[54,55] By encouraging participation in social gatherings or family events, caregivers help dementia patients maintain emotional resilience and feel valued.

- Healthy nutrition: Providing a balanced diet rich in antioxidants, omega-3 fatty acids, vitamins, and minerals has proven effective in promoting brain health and overall well-being. Foods like leafy green vegetables, berries, nuts, and fish rich in omega-3 fatty acids are known to help reduce inflammation and oxidative stress in the brain, supporting cognitive function. Nutritional studies indicate that diets incorporating these elements are associated with improved mental clarity and a reduced risk of dementia progression.[56,57] Additionally, maintaining a regular eating schedule with small, nutrient-dense meals can help stabilize energy levels and support mood in dementia patients.

- Music and art therapy: Music and art have therapeutic effects that are especially beneficial for dementia patients. Listening to familiar music or engaging in simple artistic activities like painting can evoke positive memories, stimulate emotions, and improve cognitive functioning. Music therapy has been shown to reduce agitation and improve emotional expression, which can enhance the quality of life for individuals with dementia. Recent studies show that music and art therapy sessions, even as short as 20–30 minutes, can help dementia patients feel more connected and engaged.[58,59]

Living with dementia is a challenging process for both the person with dementia and the family. The family should be supported in all efforts to improve the quality of life of the person with dementia. When approaching the person with dementia, it is important to remember that each patient is an individual. With this in mind, it is important to adopt approaches that are appropriate to the characteristics of the person with dementia.

Epidemiology of dementia and its impact on quality of life: Dementia is an increasingly common health problem worldwide, especially with the growth of the elderly population. The ageing process is one of the main factors directly influencing the prevalence of dementia. While the prevalence of dementia increases significantly in the population aged 65 years and older, this rate reaches dramatic proportions in people aged 85 years and older.[29] Dementia leads to a range of social, economic and health problems that affect not only the lives of older people but also the overall quality of life of society.

The increase in the number of people with dementia is exacerbating the impact of the disease on health services. The increased need for care places a significant burden on health systems, while reducing the quality of life for families and communities. Carers often face emotional, physical and financial difficulties, and this situation negatively affects their quality of life.[30] In addition, the long-term care needs of people with dementia lead to increased costs for health care systems and difficulties in the sustainability of these services.[31]

In economic terms, the cost of caring for people with dementia is a major burden for families and governments. These costs are one of the factors that directly affect the quality of life of people with dementia. Increased financial burden associated with dementia usually requires more resources to be allocated to health systems, which may affect the provision of other health services and reduce the overall level of welfare in society.[32]

In conclusion, the prevalence of dementia is a multidimensional problem that negatively affects the quality of life of individuals and societies. In this context, the development of strategies to mitigate the effects of dementia is of great importance in terms of protecting and improving quality of life at both individual and societal levels (**Figure 1**).

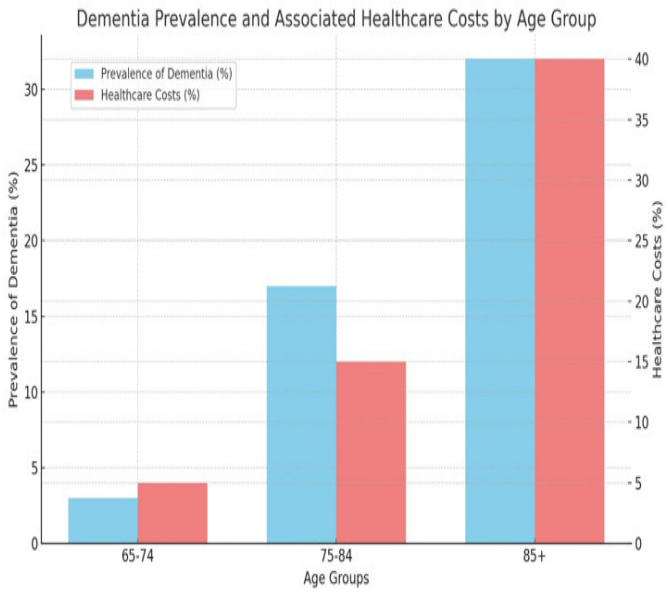

Figure 1. Dementia prevalence and health care costs by age
This figure shows how the prevalence of dementia increases with age and the associated health expenditure rises significantly. The data highlight the social and economic impact of dementia and the contribution of an ageing population to rising healthcare costs.

The impact of dementia types and clinical symptoms on quality of life: Dementias are a group of disorders that affect people's quality of life in different ways, with different types and clinical symptoms. Alzheimer's disease, one of the most common types of dementia, accounts for about 60-70% of all dementia cases and is generally characterised by memory loss, language difficulties and disorientation.[33] These symptoms of Alzheimer's disease severely limit patients' ability to live independently, leading to a significant reduction in their quality of life.

Vascular dementia is the second most common type of dementia and is caused by reduced blood flow to the brain. This type of dementia usually occurs after a stroke and manifests itself with symptoms such as impaired motor function, distraction and difficulty walking.[34] These motor and cognitive impairments caused by vascular dementia have a negative impact on quality of life by reducing the person's ability to carry out activities of daily living.

Dementia with Lewy bodies, another important type of dementia, is characterised by symptoms such as movement disorders, visual hallucinations and attention problems. This type of dementia can have symptoms similar to those of Parkinson's disease and can cause severe limitations in both the physical and cognitive abilities of patients.[35] These multiple symptoms of dementia with Lewy bodies have a direct impact on patients' quality of life, with hallucinations and motor disturbances in particular limiting daily activities and social interactions.

Frontotemporal dementia, on the other hand, tends to occur at a younger age and is characterised by personality changes, impairment in social behaviour and decline in language skills. This type of dementia causes a significant reduction in quality of life by negatively affecting people's social lives and family relationships.[36]

Each type of dementia affects people's quality of life in different ways. Impairments in patients' cognitive, motor and social skills lead to a loss of independence and a reduction in their quality of life. This situation has a negative impact not only on patients but also on family members and carers (**Figure 2**).

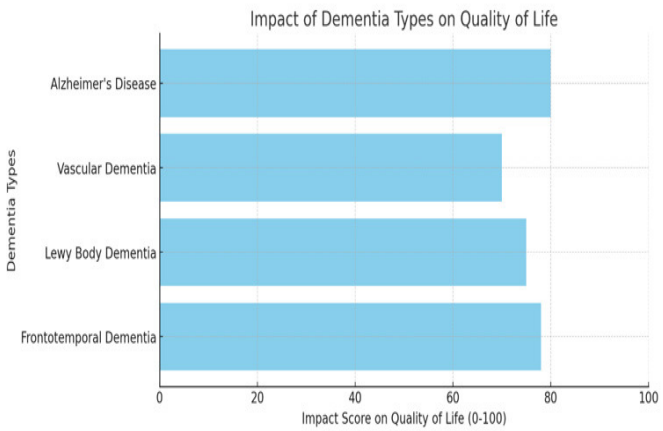

Figure 2. Impact of dementia types on quality of life
This figure shows the impact of different types of dementia on quality of life. As the figure shows, each type of dementia has a different impact on quality of life. This figure provides a comparative visualisation of the changes in patients' quality of life according to the type of dementia.

Dementia and Carers' Quality of Life

Dementia not only affects the quality of life of people with dementia, but also the quality of life of their carers. Most care for people with dementia is provided by family members or close friends. These carers are usually under great physical, emotional and mental strain without professional support.[37]

This situation has a serious impact on the carer's quality of life and can lead to negative outcomes such as stress, depression and burnout.

These difficulties experienced by carers tend to increase as dementia progresses. As people with dementia lose their independence and their ability to carry out activities of daily living declines, the burden on carers increases. This can lead to carers neglecting their own health and experiencing social isolation.[38] In addition, the economic burden on carers increases as the costs of caring for people with dementia can be quite high, especially in the long term.[39]

Another factor that negatively affects carers' quality of life is the emotional difficulties they face during the caring process. Dementia causes carers to watch their loved one gradually lose cognitive and physical abilities. This process can lead to carers becoming emotionally exhausted and experiencing grief reactions.[40] In addition, carers often feel lonely and lack adequate social support.[41]

From this perspective, protecting and improving the quality of life of carers of people with dementia should be considered an important issue in dementia management. Support services and interventions for carers can play an important role in reducing their burden and improving their quality of life. In particular, psychological support, educational programmes and practical help with care processes can help caregivers cope with stress and maintain their quality of life.[42]

Social and Economic Impact of Dementia and Quality of Life

Dementia is not only a medical condition that directly affects the quality of life of individuals, but also has profound and far-reaching social and economic effects. The social impact of dementia is a serious reduction in the quality of life of people with dementia and their families. As people with dementia lose cognitive and physical function, their risk of social isolation increases; this situation negatively affects the quality of life not only of the individual but also of the family members and communities who care for them.[43] Social isolation worsens the mental health of people with dementia and their carers, and this process is more pronounced in cases where social support is inadequate.[44]

From an economic perspective, dementia imposes a heavy financial burden on both individuals and societies. The global cost of dementia will exceed USD 1 trillion in 2018 and is expected to exceed USD 2 trillion by 2030.[45] These costs include direct health care expenditures as well as indirect costs such as care services, lost productivity and social security payments.[46] Long-term care needs due to dementia can reduce living standards by challenging the economic sustainability of families and societies.

The care needs of people with dementia are usually met by family members, leading to economic hardship for families. Carers often have to give up their full-time jobs or reduce their working hours, resulting in a reduction in household income.[47] In addition, the cost of medical and social services related to dementia care is a major burden for many families, and this burden negatively affects their quality of life.[48]

At the community level, dementia places great pressure on health and social care systems. The increasing demand for long-term care services requires a significant proportion of health budgets to be allocated to dementia-related services. This can lead to a reduction in resources for other health services and a decline in the quality of general health services.[49]

CONCLUSION

Dementia leads to irreversible loss of cognitive and physical abilities in older people and severely reduces their quality of life. Given the social and economic burden of this disease, multidisciplinary approaches and non-pharmacological interventions are becoming increasingly important. In particular, the development of effective strategies for the management of dementia is crucial both to improve quality of life at the individual level and to reduce the financial burden on society. Health policies must therefore be designed to provide more effective and sustainable solutions in this area.

REFERENCES

1. Alzheimer's disease ınternational. World alzheimer report 2019: Attitudes to dementia. *Alzheimers Dement*. 2019;15(8):1230-1242.
2. Liu Z, Yang Y, Li X, et al. Cognitive intervention for older adults with mild cognitive impairment: a meta-analysis. *Aging Ment Health*. 2017;21(8):827-835.
3. García-Alberca JM, Cruz B, Lara JP, et al. The experience of caregiving: the influence of coping strategies on behavioral and psychological symptoms in patients with Alzheimer's disease. *Aging Ment Health*. 2011;15(4):530-541.
4. Spigelmyer PC, Schreiber M. Understanding the mental health impact of caregiving for persons living with dementia. *J Gerontol Nurs*. 2019;45(5):13-17.
5. Richardson TJ, Lee SJ, Berg-Weger M, Grossberg GT. Caregiver health: health of caregivers of Alzheimer's and other dementia patients. *Curr Psychiatry Rep*. 2013;15(7):367.
6. Top MŞ, Özden SY, Sevim ME. Psikiyatride yaşam kalitesi. *Düşünen Adam*. 2003;16(1):18-25.
7. Akdeniz C, Aydemir Ö. Sağlık düzeyi ölçeğinin Türkçe'ye uyarlaması ve güvenirliliği. *Klinik Psikofarmakol Bülteni*. 1999;9(2):104-108.
8. Akyol AD. Yaşam kalitesi ve yaklaşımları. *EGEHFD*. 1993;9(2):75-80.
9. Aksungur A. Dr. Zekai Tahir Burak Kadın Sağlığı Eğitim ve Araştırma Hastanesi'nde çalışan ebe ve hemşirelerin iş doyumu ve yaşam kalitesi düzeylerinin belirlenmesi. Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü Yüksek Lisans Tezi, Ankara, 2009.
10. Torlak SE, Yavuzçehre PS. Denizli kent yoksullarının yaşam kalitesi üzerine bir inceleme. *Çağdaş Yerel Yönetimler*. 2008;17(2):23-44.
11. Das D. Urban quality of life: a case study of Guwahati. *Soc Indic Res*. 2008;88(2):297-310.
12. Boylu AA, Paçaçıoğlu B. Yaşam kalitesi ve göstergeleri. *Akad Araştırmalar Çalışmalar Dergisi*. 2016;8(15):137-150.
13. Jones G, Riseborough M. Emosyonel iyilik hali ve bunun etkileri. *Gerontologist*. 2002;42(3):123-135.
14. Acaray A. Hemodiyaliz hastalarının yaşam kalitesinin belirlenmesi ve hasta yakınlarının hastalara ilişkin algıladıkları yaşam kalitesi görüşleri ile karşılaştırılması. Marmara Üniversitesi Sağlık Bilimleri Enstitüsü Yüksek Lisans Tezi, İstanbul, 2003.
15. Yılmaz A, Çağlayan H. Yaşlı nüfusun demografik değişimi. *Turkish J Geriatrics*. 2016;19(3):130-140.
16. Aile ve Sosyal Hizmetler Bakanlığı. Yaşlı nüfusun demografik değişimi. *ASHB*. 2020;25(3):1-15.
17. Diktaş Yerli G. Modernleşme ve sosyal değişme bağlamında yaşlılık. *Sosyal ve Beşeri Bilimler Alanında Akademik Çalışmalar*. 2023;10(5):229-244.
18. Türkoğlu N, Adıbelli D. Yaşlılarda yaşam kalitesi ölçeğinin Türk toplumuna adaptasyonu. *Akademik Geriatri Dergisi*. 2014;6(2):98-105.
19. Diktaş Yerli G. Turkiye'nin demografik yapısında yaşlılık görünümleri. *ASEAD 14.* Uluslararası Sosyal Bilimler Sempozyumu Kongre Kitapçığı. 19-21 Kasım, Ankara, Türkiye
20. Can B, Uysal M, Baş B, Yümin ET. Kırılgan yaşlı bireylerde fiziksel aktivitenin önemi. *Yaşlı Sorunları Araştırma Dergisi*. 2024;17(1):64-70.
21. Çapcıoğlu İ, Alpay A. Türkiye'de yaşlılığın geleceği. *Nosyon Uluslararası Toplum ve Kültür Çalışmaları Dergisi*. 2021;8(2):77-88.
22. Görgün Baran A. Yaşlılıkta sosyal dışlanmanın toplumsal boyutu. *Yaşlılık Disiplinler Arası Yaklaşımlar*. 2016;2(1):105-126.
23. Beğer T, Yavuzer H. Yaşlılık ve yaşlılık epidemiyolojisi. *Klinik Gelişim*. 2012;25(3):1-3.
24. Edvardson D, Petersson L, Sjogren K, et al. Everyday activities for people with dementia in residential aged care: associations with person-centredness and quality of life. *Int J Older People Nurs*. 2014;9(4):269-276.
25. Kitwood TM. Dementia reconsidered: the person comes first. *Open University Press*. 1997;13(5):80-91.
26. Ebersole P, Hess P, Touhy TA, Jett K, Luggen AS. Toward healthy aging: human needs and nursing response. *Mosby Elsevier*. 2008;7(4):130-143.
27. Akyar İ. Demanslı hasta bakımı ve bakım modelleri. *Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi*. 2011;79(1):79-88.
28. Leventoğlu A. Demans hastalarının yaşam kalitesini nasıl artırabiliriz? Alev Leventoğlu Blog. 2024;12(3):55-60.
29. Prince M, Albanese E, Guerchet M, Prina M. The global ımpact of dementia. *Alzheimers Dement*. 2015;11(7):673-679.
30. Vickrey BG, Strickland TL, Fitzpatrick J, et al. Caregiver outcomes of persons with Alzheimer disease: a national study. *Alzheimers Dement*. 2006;2(3):246-255.
31. Zarit SH. Family care and burden at the end of life. *CMAJ*. 2004;170(12):1811-1812.
32. Hurd MD, Martorell P, Delavande A, Mullen KJ, Langa KM. Monetary costs of dementia in the United States. *N Engl J Med*. 2013;368(14):1326-1334.
33. Alzheimer's association. 2020 Alzheimer's disease facts and figures. *Alzheimers Dement*. 2020;16(3):391-460.
34. Kalaria RN. Vascular basis for brain degeneration: faltering controls and risk factors for dementia. *Nutr Rev*. 2016;74(suppl_1):25-36.
35. McKeith IG, Boeve BF, Dickson DW. Diagnosis and management of dementia with Lewy bodies: Third report of the DLB consortium. *Neurology*. 2006;65(12):1863-1872.
36. Rascovsky K, Hodges JR, Knopman D, et al. Sensitivity of revised diagnostic criteria for the behavioural variant of frontotemporal dementia. *Brain*. 2011;134(9):2456-2477.
37. Pinquart M, Sörensen S. Correlates of physical health of informal caregivers: a meta-analysis. *Gerontologist*. 2007;47(5):741-758.
38. Schulz R, Martire LM. Family caregiving of persons with dementia: prevalence, health effects, and support strategies. *Am J Geriatr Psychiatry*. 2004;12(3):240-249.
39. Wolff JL, Spillman BC, Freedman VA, Kasper JD. A national profile of family and unpaid caregivers who assist older adults with health care activities. *JAMA Intern Med*. 2016;176(3):372-379.
40. Hooker K, Monahan DJ, Bowman SR, Frazier LD, Shifren K. Personality counts for a lot: predictors of mental and physical health of spouse caregivers in two disease groups. *J Gerontol B Psychol Sci Soc Sci*. 1998;53(2):P73-P85.
41. Brodaty H, Donkin M. Family caregivers of people with dementia. *Dialogues Clin Neurosci*. 2009;11(2):217-228.
42. Parker D, Mills S, Abbey J. Effectiveness of interventions that assist caregivers to support people with dementia living in the community: a systematic review. *Int J Evid Based Healthc*. 2008;6(2):137-172.

43. Alzheimer's Association. 2021 Alzheimer's disease facts and figures. *Alzheimers Dement*. 2021;17(3):327-406.
44. Brodaty H, Donkin M. Family caregivers of people with dementia. *Dialogues Clin Neurosci*. 2009;11(2):217-228.
45. World Health Organization. Risk reduction of cognitive decline and dementia: WHO guidelines. *WHO Guidelines*. 2019;10(5):45-50.
46. Wimo A, Jönsson L, Bond J, Prince M, Winblad B. The worldwide economic impact of dementia 2010. *Alzheimers Dement*. 2017;9(1):1-11.
47. Ettema TP, Droes RM, de Lange J, Mellenbergh GJ, Ribbe MW. A review of quality of life instruments used in dementia. *Qual Life Res*. 2005;14(3):675-686.
48. Gaugler JE, Kane RL, Kane RA, Newcomer R. Early community-based service utilization and its effects on institutionalization in dementia caregiving. *Gerontologist*. 2009;45(2):177-185.
49. Prince M, Bryce R, Ferri C. World alzheimer report 2015: journey of caring. An analysis of long-term care for dementia. *Alzheimers Dement*. 2015;11(7):673-679.
50. Andrade C. The role of physical exercise in dementia prevention: a systematic review. *J Geriatr Psychiatr Neurol*. 2020;33(5):287-295.
51. Albuquerque M. Physical activity and cognitive function in elderly with dementia: a critical review. *Aging Mental Health*. 2019;23(7):875-883.
52. Prabhakar S. Cognitive training as an intervention for Alzheimer's disease: efficacy and challenges. *Int J Geriatr Psychiatr*. 2021;36(2):314-320.
53. Ellis R. The impact of cognitive exercises on memory in dementia patients: a meta-analysis. *J Cognitive Neurosci*. 2018;30(4):569-579.
54. Marquez A. Social interaction and quality of life in elderly with dementia. *Social Sci Med.* 2017;195:123-131.
55. Smith L. Emotional support and dementia: effects on caregivers and patients. *J Elderly Care Studies.* 2016;14(3):258-265.
56. Garcia M. Nutritional strategies in dementia management: focus on brain health. *Nutritional Neurosci*. 2020;23(11):923-930.
57. Roberts A, Turner D. Omega-3 fatty acids and brain health in older adults. *J Nutrition Health*. 2019;26(2):156-162.
58. Thompson J. Music therapy for dementia patients: evidence-based benefits. *J Music Therapy*. 2021;58(1):23-34.
59. Hughes S. Art therapy and dementia: promoting engagement and cognitive function. *Arts in Psychotherapy*. 2018;59:28-35.